PROCEEDINGS

OF

THE ROYAL SOCIETY.

1830–1831. No. 3.

February 3.

GEORGE RENNIE, Esq. V.P., in the Chair.

The following Presents were received, and thanks ordered for them :—

Catalogue of the Hunterian Collection in the Museum of the Royal College of Surgeons in London, Part II.; comprehending the Pathological Preparations in a Dried State. 4to.—*Presented by the College.*

The Journal of the Royal Institution. No. 2. 8vo.—*The Institution.*

The Philosophical Magazine and Annals of Philosophy. No. 50. 8vo. —*The Editors.*

The National Portrait Gallery. No. 22. 8vo.—*The Proprietors.*

A General History of Birds. By John Latham, M.D. F.R.S. In 10 Volumes 4to.—*The Author.*

Index to the General History of Birds. By John Latham, M.D. F.R.S. 4to.—*The Author.*

Account of the "Traité sur le Flux et Réflux de la Mer" of Daniel Bernouilli. By John W. Lubbock, Esq. V.P. and Treas. R.S. 8vo. —*The Author.*

Refutation of Mr. Palgrave's Remarks; with Additional Facts. By N. H. Nicolas, Esq. 8vo.—*The Author.*

A Paper was read, entitled, "On the Lunar Theory." Communicated by the Rev. Dr. Lardner.

The subject treated of in this paper is introduced by a review of the labours of Clairault, Euler, D'Alembert, and Thomas Simpson. The theories of these eminent men, the author remarks, were very deficient in accuracy, and were not at all adequate, without correction from observation, to the construction of tables. They could serve only to point out the arguments of the equations, and not all even of these. The inequalities of the moon's motion are investigated by approximating processes, which lead to results more or less accurate, according as the approximations are carried to a greater or less extent. The writers above mentioned had contented themselves with short and easy approximations; and though they had accomplished much, had yet left much more to be done. Subsequently to these, Mayer published an elaborate theory of the moon; but his coefficients required much correction, the results of his computations being in some cases found to differ very widely from observation.

A much greater degree of accuracy was attained by La Place, who bestowed particular attention on the influence of minute quantities in every part of his theory. In the present paper the author has endeavoured to introduce further improvements in the lunar theory, by carrying the approximations considerably further than they have hitherto been made.

In the solutions of the problem given by former mathematicians, the chief obstacle to the attainment of accuracy was the extreme length and labour of the necessary computations. Another object, therefore, which the author has had in view, is to facilitate these computations, and render them less laborious. This he endeavours to effect by the employment of certain artifices, by which the multiplicity of small terms will, with their co-efficients, be reduced within a practicable compass, and their numerical computation rendered less appalling.

The co-efficient of the equation depending on the moon's distance from the sun, affords the means of calculating the sun's horizontal parallax. For this purpose La Place has computed this co-efficient with greater accuracy than the rest; and he makes the sun's parallax nearly 9″. The author's theory gives it little more than $8''\frac{1}{2}$, which is very near the mean of the various results obtained by the observation of transits. He thinks that there is, therefore, great reason to conclude that its true value is about this quantity.

February 10.

DAVIES GILBERT, Esq. V.P., in the Chair.

Sir Philip de Malpas Grey Egerton, Bart. M.P., was elected a Fellow of the Society.

The following Presents were received, and thanks ordered for them:—

Proceedings of the Committee of Science of the Zoological Society. No. 2. 8vo.—*Presented by the Society.*

A Compendious Grammar of the Egyptian Language, as contained in the Coptic and Sahidic Dialects; by the Rev. Henry Tattam: —with an Appendix, consisting of the Rudiments of a Dictionary of the Ancient Egyptian Language in the Enchorial Character; by the late Dr. Young. 8vo.—*The Author.*

Recent Experimental Researches in Electro-Magnetism and Galvanism. By William Sturgeon, Esq. 8vo.—*The Author.*

Conformity with the National Church.—An Answer to "Reasons for Non-Conformity," by John Locke, published in a Life of Mr. Locke by Lord King. (*Anon.*) 8vo.—*The Author.*

Flora Batava. No. 87. 4to.—*His Majesty the King of Holland.*

Nouveaux Mémoires de l'Académie Royale des Sciences et Belles-Lettres de Bruxelles. Tome IV. et V. 4to.—*The Academy.*

Mémoires sur les Questions proposées par l'Académie Royale des Sciences et Belles-Lettres de Bruxelles, qui ont remporté les Prix en 1822–3. Tome IV. 4to.

———— en 1824–5. Tome V. 4to.

———— en 1826–7. Tome VI. 4to.

———— en 1828. Tome VII. 4to.—*The Academy.*

Correspondance Mathématique et Physique, publiée par A. Quetelet. Tome V. 8vo.

———— Livraisons 1 à 6 de Tome VI. 8vo.—*Professor Quetelet.*

The reading of a Paper, entitled, "On a New Combination of Chlorine and Nitrous Gas." By Edmund Davy, Esq. F.R.S. M.R.I.A. Professor of Chemistry to the Royal Dublin Society. Communicated in a Letter to Davies Gilbert, Esq. late President of the Royal Society;—was commenced.

February 17.

DAVIES GILBERT, Esq. V.P., in the Chair.

The following Presents were received, and thanks ordered for them:—

A Manual of Analytical Chemistry. By Henry Rose, Professor of Chemistry at Berlin. Translated from the German by John Griffin. 8vo.—*Presented by the Publishers.*

Tables of Life Contingencies. By Griffith Davies, Esq. 8vo.—*The Author.*

Caii Plinii Secundi Libri de Animalibus cum Notis Variorum, curante J. B. F. S. Ajasson de Grandsagne. Notas et Excursus Zoologici Argumenti adjecit G. Cuvier. 8vo.—*The Editors.*

Aperçu d'un Ouvrage Analytique. Par M. Decajeul. 8vo.—*The Author.*

The reading of Professor Davy's Paper was resumed and concluded.

In the course of his experiments on a new test for chlorine gas, an account of which was lately read to the Royal Society, the author was induced to examine the gases produced by the mutual action of nitric acid and different chlorides, and also of the nitric and muriatic acids on each other. When fused chloride of sodium, potassium or calcium, in powder, is treated with as much strong nitric acid as is sufficient to wet it, a considerable action takes place: cold is produced, and a gas of a bright reddish or yellowish colour is copiously evolved, which is promoted by applying a gentle heat. This gas, especially in the early stage of the process, appears to be a mixture of chlorine and another gas, distinguished from it by the great facility with which it is absorbed by water. From this circumstance, and from its also exerting a considerable action upon mercury, its properties cannot be satisfactorily ascertained by collecting it in con-